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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,764	03/19/2004	Mark Johnsgard	PA2704US	7692

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EXAMINER	
WU, IVES J	

ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
09/02/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,764	JOHNSGARD ET AL.	
	Examiner	Art Unit	
	IVES WU	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In response to the Interview dated 6/30/2008, a new ground of rejections for claims 1-27 is introduced in the following.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1-7, 15-24** and **26-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnsgard (US04986838) in view of Seeley et al (US06530977B2), evidenced by Teru et al (US06331281B1).

As to a scrubber interface device in fluid communication with the inlet manifold and configured to deliver the effluent gas stream from the inlet manifold to a gas scrubbing system in a scrubber inlet device in **independent claim 1**, Johnsgard (US04986838) discloses an inlet system for scrubber (Title). An effluent gas scrubbing system is disclosed having improved scrubber inlet system including a transition tube having a fluted lower portion for directing particulate carrying gas into the mist saturated scrubbing chamber of a gas scrubber (Abstract, line 1-5). As shown in Figure 2 below, the scrubber inlet system 14 is in fluid communication with inlet pipe 18, and deliver the effluent gas stream from inlet 18 to a gas scrubbing system 12.

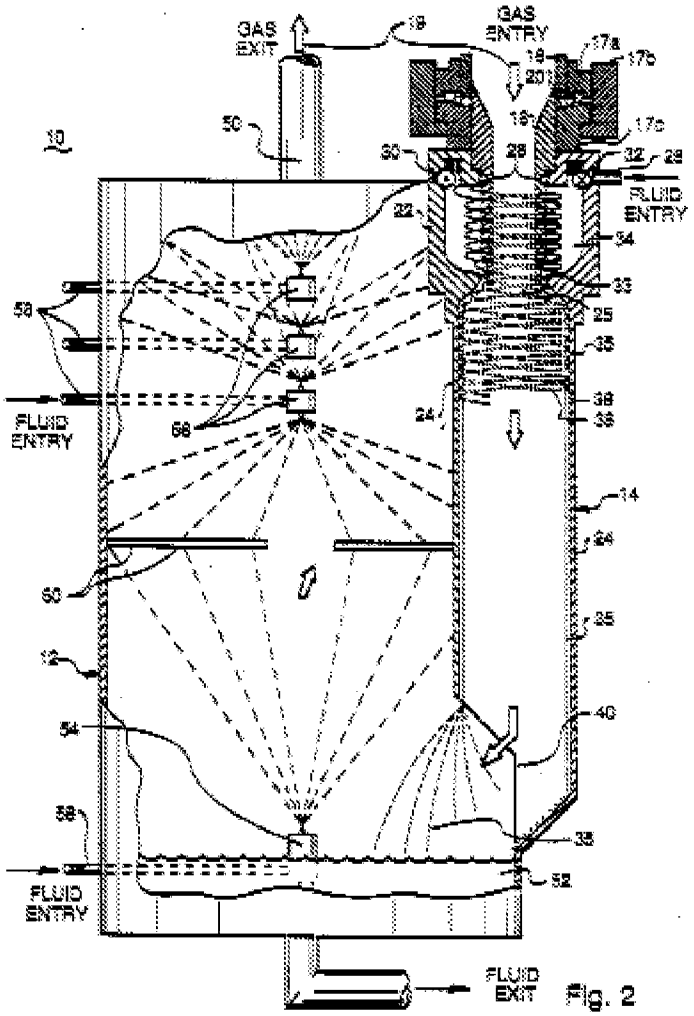


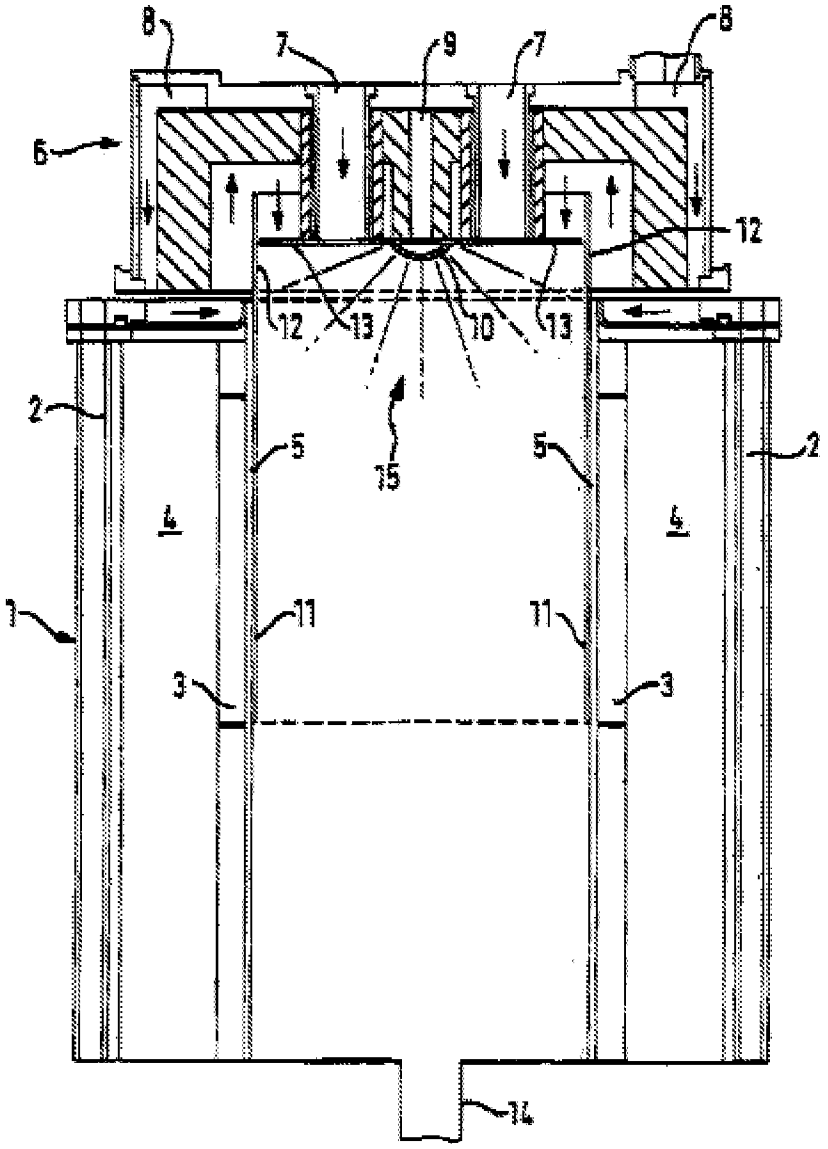
Fig. 2

As to a port configured to receive an effluent gas stream from an exhaust line in inlet manifold in **independent claim 1**, Johnsgard discloses gas entry 16 with inlet pipe 18 as shown in Figure 2 above.

As to a heated gas inlet configured to receive a stream of heated gas in an inlet manifold in **independent claim 1**, Johnsgard **does not teach** such manifold including a heated gas inlet as claimed.

However, Seeley et al (US06530977B2) **teach** Abatement of Semiconductor Processing Gas (Title). As illustrated in Figure below, which has exhaust gas inlet 7, hot air inlet 8. In a second embodiment, air is mixed with the gas stream to be preheated prior to mixing. An air

temperature of at least 300°C to 500°C is preferred (Col. 2, line 3-4). The gas stream and air are preferably mixed prior to entry into the container (Col. 2, line 7-8).



The advantage of injecting a hot gas into the apparatus is to avoid the results in the formation of solid or particulate materials which may adhere to the inner surfaces of the burn tube or container in which the abatement is taking place. Such solid materials can thus restrict the flow of gas through the container and may form a thermal insulation layer which can reduce the surface temperature of the containers (Col. 2, line 35-42).

Therefore, it would have been obvious at time of the invention to install a hot gas inlet disclosed by Seeley et al near the gas entry 16 in the gas scrubber inlet system of Johnsgard in order to obtain the above-cited advantage.

As to port including an insulating insert sleeve in **claim 2,** insulation around an exterior in **claim 3**, it would be obvious to one of ordinary skills in the art to further prevent from the clogging of gas effluent by additional preventive means such as insulating insert sleeve and insulation around exterior to keep the gas effluent from cooling in the apparatus.

As to scrubber interface device including a lower portion having a generally cylindrical interior surface in **claim 4**, Johnsgard discloses scrubber inlet system 14 including a transition tube 24 in Figure 2 above.

As to an insulated insert portion providing fluid communication between the inlet manifold and the lower portion of the scrubber interface device in **claim 4**, Johnsgard does not discloses the insulated insert portion. However, it would have been obvious to one of ordinary skills in the art to use insulated insert portion as means to keep the gas effluent from clogging due to the heat loss anywhere in the lower portion of cylindrical interior surface.

As to scrubber interface device further including a system for providing a washing fluid to the cylindrical interior surface of the lower portion in **claim 5**, Johnsgard discloses the transition gas 33 to be formed so that as fluid 35 exiting the cavity 34, it maintains a high rotational velocity as it travels down the length of the transition tube 24 in the Figure 2 above.

As to insulated portion extending into the inlet manifold in **claim 6**, Johnsgard does not disclose the insulated insert portion extending to the inlet area, however, it would have been obvious to one of ordinary skills in the art at time of the invention to extend the insulated insert portion into the inlet area to provide maximum heat insulation to prevent from clogging by the condensation of gas effluent.

As to inlet manifold to be separable from scrubber interface device in **claim 7**, Johnsgard discloses the inlet of gas entry 16 being glued to a 1st threaded union 17a, which is in turn threadably engaged to the union nut 17b. Union nut 17b is then threadably engaged to a 2nd thread union 17c, which is glued to inlet pipe 18 (Col. 4, line 39-43). Inlet pipe 18 maybe readily removed by unthreading the union nut 17b from supply pipe 16 and removing the inlet pipe 18 (Col. 6, line 1-4).

As to source of heated gas configured to provide the stream of heated gas to the heated gas inlet in **claim 15**, Seeley et al (US06530977B2) disclose, in 2nd embodiment, air to be mixed with the gas stream being preheated prior to the mixing, it would have a source of heated gas before the inlet to the container.

As to the inert gas in **claim 16**, it would be obvious to use inert gas instead of air because it is well known in the art that both air and inert gas are useful in mixing with exhaust gas from semiconductor manufacturing process as evidenced by Teru et al (US06331281B1) – Col. 11, line 20-22.

As to inert gas comprising N_2 in **claim 17,** the air comprises N_2.

As to the temperature regulation system for the hot gas in **claim 18**, temperature sensor, controller to regulate the temperature of heated gas according to a signal from the sensor in **claim 19**, Seeley et al (US06530977B2) disclose air from inlet 8 to be heated for example 400 °C, so that the air flowing into the container thru inlet 8 is heated by contact therewith (Col. 2, line 32-37).

As to step of receiving effluent gas stream into manifold in a method for delivering an effluent gas stream into a gas scrubbing system in **independent claim 20**, Johnsgard discloses inlet pipe 18 to receive the effluent gas in Figure 2 above.

As to step of heating interior surface of the manifold to near a condensation temperature of the effluent gas in a method in **independent claim 20**, Johnsgard (US04986838) **does not teach** step of heating the surface of the manifold as claimed.

However, Seeley et al (US06530977B2) **teach,** in use of the apparatus, both the sleeve 11 and the plate 13 are heated (the former by the heater 5 and the latter by means not shown) to, for example, 400 °C (Col. 3, line 32-34).

The advantage of heating the inner surface of mixing area is to allow the air entering the container at elevated temperature (Col. 3, line 35-37).

Therefore, it would have been obvious at time of the invention to include step of heating the internal surface of manifold disclosed by Seeley et al in the gas scrubber inlet system of Johnsgard in order to obtain the above-cited advantage.

As to step heating of surface of manifold to near condensation temperature of the effluent gas in **independent claim 20**, and condensation of effluent being the condensation temperature

of aluminum chloride in **claim 21**, above the condensation temperature of the effluent gas in **claim 24**, in absence of showing criticality of records, the optimized temperature to be near or above the condensation temperature of aluminum chloride in known process renders prima facie obvious within one of ordinary skills in the art. *In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).*

As to step of providing effluent gas stream to an interface device that is effective to suppress nucleation of condensation from effluent gas stream, and configured to direct effluent gas stream into gas scrubbing system in **independent claim 20**, Johnsgard discloses the inlet system for gas scrubber including the inlet system 14 as shown in Figure 2 above. By swirling or spinning the fluid in the transition tube, the internal walls of the transition tube may be completely coated with a washing flow of fluid and continuously flushed so as to prevent SiO_2 buildup (Col. 5, line 15-19). The interface opening 40 allows gas to pass from the transition tube to the initial scrubbing chamber without creating unflushed surfaces in the transition tube or the scrubbing chamber (Col. 6, line 27-32).

As to heating interior surfaces of manifold including flowing a heated gas stream into the manifold in **claim 22**, Seeley et al discloses the mixing of heated gas with effluent gas as shown in Figure above.

As to pass the effluent gas stream through an abrupt hot-to-cold transition region in order to suppress condensation in **claim 23**, Johnsgard discloses the transition tube 24, the abrupt dry-to-wet transition minimizing the formation of stagnant wet surfaces on which SiO_2 may collect and the smoothness of that transition reduces the extent of gas turbulence, which can cause fluid mist to be carried back into the dry inlet pipe 18. The dry pipe includes the hot gas heating and inlet system includes spray of water, dry-to-wet transition reads on hot-to-cold transition on instant claim.

As to inlet manifold including a port configured to receive an effluent gas stream from exhaust line and a scrubber interface device in fluid communication with the inlet manifold to a gas scrubbing system in a scrubber inlet device in **independent claim 26**, the disclosure of Johnsgard, Seeley et al is incorporated herein by reference, the most subject matters as claimed, have been recited in applicants' claim 1 and have been discussed therein.

As to the effluent gas stream at a 1st temperature and means for maintaining the effluent gas stream at or near the 1st temperature in **independent claim 26**, the disclosure Johnsgard, Seeley et al is incorporated herein by reference, the most subject matters as currently claimed has been recited in applicants claims 1 and 20 and have been discussed therein.

As to the insulated insert portion in scrubber inlet device in **claim 27**, the disclosure of Johnsgard, Seeley et al is incorporated herein by reference, the most subject matter as currently claimed, has been recited in applicants' claim 4, and has been discussed therein.

(3). **Claims 8, 25, 10-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnsgard (US04986838) in view of Seeley et al (US06530977B2), further in view of Skibowski (US02608695).

As to inlet manifold including a plunger for clearing the scrubber interface device in **claim 8**, and step of clearing the interface device while providing the effluent gas stream to the interface device in **claim 25**, Johnsgard, Seeley et al **do not teach** the use of plunger as claimed.

However, Skibowski (US02608695) **teaches** plunger for clearing waste pipes and drains (Title). it relates to improvements in a plunger for clearing waste pipes and drains of waste accumulations and other obstructions which either through use or accident, entering such passages and clog them to such an extent the plumbing systems are rendered unusable (Col. 1, line 1-6).

The advantage of using plunger is its light, durable, simple and economic construction for quickly and effectively clearing drain passages (Col. 1, line 22-25).

Therefore, it would have been obvious at time of the invention to install plunger of Skibowski in the inlet manifold of exhaust gas, hot air in Seeley et al for the inlet system of Johnsgard.

As to insulated insert portion in the scrubber interface device in **claim 10**, the disclosure of Johnsgard, Seeley et al is incorporated herein by reference, the most subject matter as currently claimed, has been recited in applicants' claim 4, and has been discussed therein.

As to insulated portion having a minimum diameter for providing fluid communication to the inlet manifold and plunger head having a maximum diameter less than the minimum diameter of insulated insert portion in **claim 10**, it would have been obvious to one of ordinary

skills in the art at time of invention to have minimum diameter for the insulated insert portion in order to efficiently optimize the performance of scrubber inlet system for the determined operational conditions. "Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimension are critical". In re Woodruff 16 USPQ2d 1934 (Fed. Cir. 1990). It also would be obvious that plunger head has a maximum diameter less than minimum diameter of insulated insert portion in order to clear most clogs on the wall of insulated insert portion.

As to tapered portion in insulated insert portion in **claim 11**, it would be obvious for changes in shapes, but does not affect functions. *In re Dailey*, 357 F.2d 669, 149 USPQ47 (CCPA 1966).

As to recess portion to retract the plunger when it is not used in **claim 12,** it would be obvious to have a recess portion to accommodate the plunger in the inlet system of Johnsgard in order to integrate the function of plunger well with the rest of the system.

As to the recess portion having a heated gas inlet in **claim 13**, to distribute the stream of heated gas from the heated gas inlet in **claim 14**, it would be obvious to have heated gas inlet in the recess portion to distribute the heated stream because rearrangement of parts renders obvious. *In re Kuhle*, 526 F.2d 553, 188 USPQ7 (CCPA 1975).

(4). **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnsgard (US04986838) in view of Seeley et al (US06530977B2), Skibowski (US02608695) further in view of Kennedy et al (US05927957A).

As to plunger including a perforated plunger head in **claim 9**, Skibowski **does not teach** the perforated plunger head as claimed.

However, Kennedy et al (US05927957A) **teach** plunger device with holes on the head as shown in Figures 13 and 14 below.

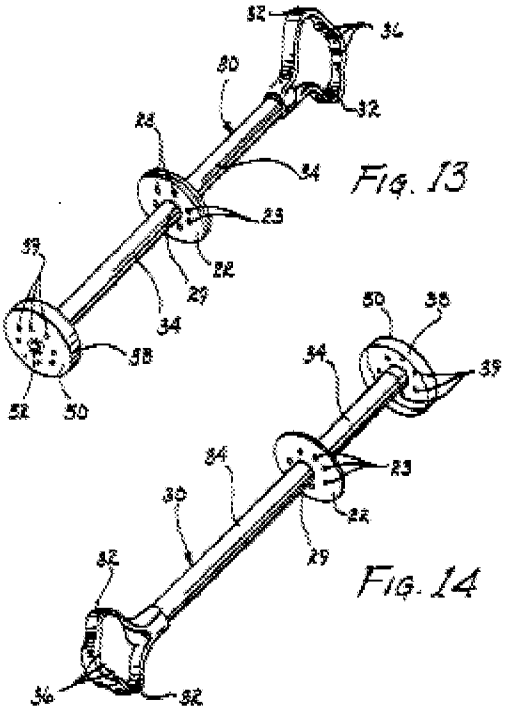


Fig. 13

Fig. 14

The advantage of use perforated plunger device is to allow air to flow through them so that air flows in through the back end of the plunger and a suction force is prevented from being created at the front portion of the plunger that would draw or suck water and/or clogging material into the interior of the plunger when the handle is pulled and extended from the plunger (Col. 3, line 8-16).

Therefore, it would have been obvious at time of the invention to substitute the plunger of Skibowski with a perforated plunger plate of Kennedy et al in the inlet system of Johnsgard in order to obtain the above-cited advantage.

As to perforated plunger head allowing effluent gas stream to flow through scrubber interface device whenever the plunger head to be disposed therein in **claim 9**, in view of the substantially identical design of the plunger head of Kennedy et al, it would allow the effluent gas stream flow through.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu
Art Unit: 1797
Date: August 18, 2008

/Jason M. Greene/
Primary Examiner, Art Unit 1797
8/19/08